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Citizens' Bulletin

Volume 10 Number 3 November 1982 \$5/yr.
The Connecticut Department of Environmental Protection



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Citizens' Bulletin

November 1982

Volume 10 Number 3

\$5/yr.

Cover Photo: Filming of "Ragtime" in Essex;
Dominick J. Ruggiero, Dept. of
Economic Development

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DEP Citizens' Bulletin
(USPS 041-570)

Published eleven times a year by the Department of Environmental Protection. Yearly subscription \$5.00; two years, \$9.00. 2nd class postage paid at Hartford, Connecticut. Funds are also provided through a federal grant from the Office of Coastal Zone Management under the Coastal Zone Management Act of 1972. Please forward any address change immediately.

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Bats victims of bad press

If you're one of those many people who believe that bats--the flying mammals associated with witches and Halloween--are rabid, filthy, aggressive animals that can infect humans with tuberculosis and other diseases, you're mistaken.

Those are among the myths that make the bat one of the world's most misunderstood animals, according to "National Wildlife" magazine. The fact is, bats deserve to be known as intelligent, gentle, and entertaining animals with an enormous appetite for insects. They pose little health risk to man.

Ignorance and sensational media coverage continue to fuel the myths, but if you're interested in the truth about bats, consider the following facts:

Bats are not the frequent carriers of rabies that people think they are. "It is safe to say that the incidence of rabies among bats is no greater than the incidence of rabies in other wild animals," according to Dr. Denny Constantine, widely recognized as the world's foremost authority on rabies and other diseases in bats. One bat out of a thousand carries rabies, says Constantine, and in the past 30 years only ten people in the United States have contracted rabies from bats.

"Many more people are killed annually by dog attacks, bee stings, power motors, or lightning than have been killed by rabid bats over the last 30 years," says the magazine.

Bats are not by nature aggressive. Healthy bats do not attack people, according to a survey of all available research. One scientist who has handled some 200 species of bats in 20 countries for more than 23 years told "National Wildlife" he had never seen an aggressive bat. Nor had any of his colleagues ever been attacked by a bat. Stories that describe squadrons of bats attacking

humans simply aren't based in fact, according to the magazine.

Bat droppings are not dangerous sources of respiratory diseases, such as tuberculosis. "There is no evidence to suggest that bats ever transmit tuberculosis to man," said Constantine. Although bats have also been accused of transmitting the fungal disease histoplasmosis, this rare disease is not usually traceable to bats because the fungus can't survive in the hot, dry attics where bats live. Instead, histoplasmosis usually flourishes in bird roosts and chicken coops in the humid southeastern United States.

Bats are not dirty animals likely to infect homes with dangerous parasites. Bat researchers agree, "that you just don't see dirty bats in the wild." Like many mammals, bats work hard at keeping themselves clean. And parasites that feed on bats are specialized; they rarely pose any threat to humans.

Poison is the worst possible means of getting bats to leave human living quarters. If you really want to get rid of bats, says "National Wildlife," the best way to do it is to seal off all the entrances to their roosting sites--the holes and cracks that give the tiny animals access to attics. Using pesticides poses a real threat to human health, despite the fact that many pest control companies promote the practice and circulate sensational literature about the dangers of bats. And even though the United States Environmental Protection Agency has warned against the use of a pesticide commonly used on bats--Rozol--twenty states still permit the use of this anticoagulant to poison bats.

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AIAI...

archaeology plus lively introductions of area's earliest residents

By Kirsten Engel, Environmental Intern

About 12,000 years ago prehistoric Indians roamed the Northeastern United States, following herds of mastodon, elk, and caribou. These semi-nomadic tribes, perhaps Connecticut's first citizens, left little evidence of their stay other than fluted stone points and charred bones. Nevertheless, the few artifacts were enough for experts at the American Indian Archaeological Institute to determine that the AIAI's site was once an actual settlement of prehistoric peoples where tools were manufactured, used, and abandoned. Charcoal analysis dated the site at 10,190, \pm 300, years ago.

Since 1968 the American Indian Archaeological Institute has pioneered in research about prehistoric and historic peoples of the Northeastern United States as well as the preservation and interpretation of Northeastern Indian relics. But far from hoarding their finds in air-conditioned vaults or little-known scientific journals as do many big-name research institutes, the AIAI is dedicated to

sharing knowledge with as large an audience and in as many ways as possible.

Located off Rte 199 in Washington, Connecticut, the Institute maintains a Visitor's Center that is open year-round. Here anyone may view the skeleton of a 10-ton mastodon or an authentic Indian longhouse and learn about the history and culture of this region's woodland Indians from 10,000 years ago to the present.

Moreover, education means participation to the AIAI staff. Activities offered by the Institute, in which the public may join, include all aspects of archaeological research and Indian artistry. For a small fee you may work with AIAI staff to excavate an Indian site, construct a basket in a weaving workshop, discover the secrets of Indian survival, or learn a variety of other skills and crafts.

Only ten years after its inception the Institute, which,



The Indian longhouse, whose frame is shown here, will be part of a simulated Indian village at AIAI.



Kirsten Engel photos

AIAI displays bones of a ten-ton mastodon, found in Farmington in 1913.



In the construction of the Indian longhouses, strips are used to bind the sapling frame together.

in the words of President Edmund K. Swigart, exists "to seek out and share over 10,000 years of Indian prehistory and history here in the Northeast," boasts a 20 member staff, a budget of close to half a million dollars, and a reputation that commands respect among archaeologists and experts in the field of Indian culture.

Exploring the Visitor Center's museum, gift shop, and outdoor paths, it is easy to forget that the AIAI's beginnings date back 14 years, to when seven local Washingtonians became aware of the almost total lack of knowledge of American prehistory in the Northeast. With the help of students from nearby schools, the group began to walk the plowed fields of Litchfield County looking for artifacts and to organize informal archaeological excavations on the banks of the Shepaug River in the town of Washington.

An overwhelming response to the research efforts proved that the previous lack of archaeological activity did not reflect a lack of popular interest in Indian culture. In just two years the newly created Wappinger Chapter of the Archaeological Society of Connecticut numbered 300, helped, no doubt, by the discovery of several possible Indian dwellings. In 1971 the chapter incorporated as the non-profit Shepaug Valley Archaeological Society, independent from the Archaeological Society of Connecticut.

Growing at the same pace as membership was the Society's collection of artifacts. Some of these were found through the group's excavations, the rest were donated by individuals. It was this accumulation that triggered the Society's expansion in form and function--a move that eventually resulted in the present AIAI.

When Society members discovered they could not depend upon a large museum to preserve and display their artifacts in the manner that they had envisioned, they voted to do it themselves. To accomplish their

task the group needed a home base for their operations and by 1975 they had it: a snail shell shaped building of Algonquin lodge design which has served as an inspiration to the staff ever since its completion. The building was named the American Indian Archaeological Institute, and it has become a unique regional resource center for Indian research and education.

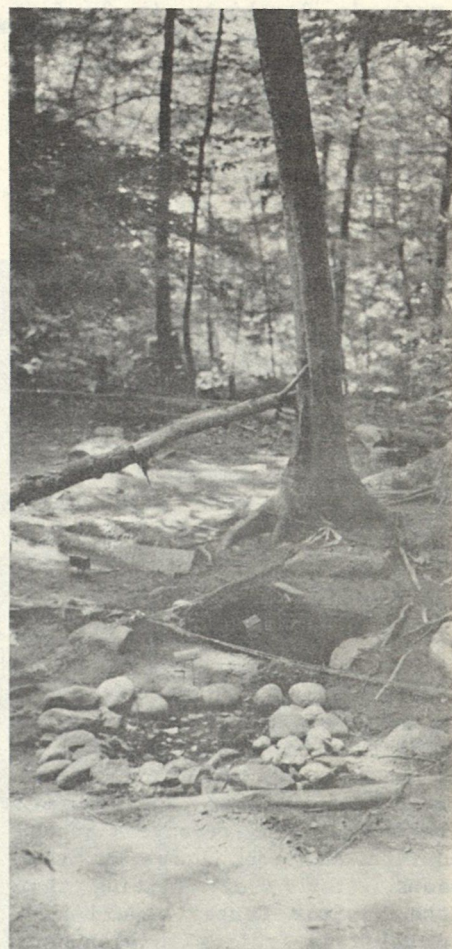
If you would like to learn about Northeastern Native American culture, the Institute's museum is probably the best place to start your studies. "Studies" is a misleading term; it conjures up images of dusty books while the museum is crammed full of interesting objects. There's the skeleton of the 10-ton mastodon, for instance, complete with the massive skull and foot bones. The skeleton was found in 1913 by men digging a ditch in Farmington.

What's it doing in an Indian museum? Lesson One in Indian culture: Besides the fact it was out roaming the Connecticut countryside with Paleo-Indians 12,000 years ago, the beast played an important role in Indian folklore. According to a Delaware legend, the mastodon rebelled against its status as a beast of burden and fought a war with the other forest animals with dramatic results. "The Great Spirit caused. . .the cranberry to come and grow in the marshes--to be used as food, its coat always bathed in blood, in remembrance of that awful battle," an information card on the exhibit at AIAI will tell you.

The museum exhibits are designed to catch the attention of a wide audience and, at the same time, to give the visitor the freedom to learn as much as he or she wishes. One can circle the outer walls and view only artifacts arranged in chronological periods. Or, one can wind in and out of special exhibits designed to lead the visitor through the archaeologist's decision-making process. Here the interested student of Indian culture can follow the archaeologist's mind as he or she pieced together 12,000 years

of Indian history with only a few clues such as skeletons, tools, and charcoal. These exhibits show how the Indians lived, the weapons they used, the burial ceremonies they observed, and they even allow the visitor to handle a few reproductions of artifacts.

Perhaps more entertaining than the exhibits, but just as educational, is a simulated Indian longhouse located off the main display area. Here Karen Cooper, a staff member of Cherokee descent, tells visitors and groups of school children about Indian games and customs. You'll find out that Lacrosse, which most people attribute to the French, was originally an Indian game played between entire villages to settle disputes. "Can you imagine playing Lacrosse for three days over a mile-long field?" Cooper asks a group of youngsters.



Simulated archaeological site is one feature on AIAI's Habitats Trail.

Other games were used to teach young Indians skills they would need later in life, such as marksmanship. In the rabbit game, one child would toss a disk high in the air while another tried to aim an arrow directly through it. Still others took much preparation, like the snow snake game. In the dead of winter, when most of us would play Scrabble® in front of the fireplace if we wanted to have a little fun, Northeastern Indians would drag a log through the snow to form a long straight furrow--maybe a mile long. After the furrow was filled with water and iced over, the villagers would place bets as to who could shoot a stick through the opening the farthest. Because the sticks slithered like snakes as they raced over the ice, the contest was called the "snake game."

Typical of the longhouses built by the Northeastern Indians over 400 years ago, the museum's longhouse is 20 feet long by 16 feet wide. This was big enough to accommodate an extended Indian family. As Cooper explains, when a man got married, he came to live with his wife's family. The Northeastern Indian societies were matriarchies; the women owned the property and elected the male chiefs.

Longhouses were made from green saplings sunk into the ground with the ends lashed together at the top with rawhide strips. The outer covering of the structure was made of bark and seamed with pine pitch (resin). For insulation, woven cattail or bullrush mats were used. Food was cooked over a fire pit in the middle of the floor, and the smoke escaped through an opening cut in the roof. Skins, herbs, and other plants were dried on racks inside the longhouse.

Because the Northeastern Indian's life revolved around nature and the change of seasons, it is only fitting that the Visitor Center should have a Habitats Trail with signposts that recreate the changing environment the Indian peoples encountered. Walking the quar-



School children learn Indian history and folklore from AIAI's Karen Cooper. Show-and-tell setting is Institute's simulated longhouse.

ter-mile trail, you'll see that about every thousand years or so the types of plants and trees that grew in this area entirely changed. Ten thousand years ago a spure-forest began to dominate the area. "Imagine," reads the trail guide, "Christmas trees everywhere--without the tinsel, of course." Four thousand years ago the landscape was dominated by the mighty chestnut trees, most of which have been killed off by a fungus during the past century.

The Habitats Trail is complemented by the "Practical Path," a short walk around the center with color markers identifying plant uses--for food, technology, medicine among other things. For example, did you know that red cedar trees were used to cure mumps? Or that wild sarsaparilla was used as a fish lure? The exhibits and trails are excellent learning devices for children (the mastodon and the longhouse are always favorites), and

Film makers find Connecticut a versatile back lot

By Barbara Beeching,
Connecticut Department of Economic Development



Director, on ladder at left, oversees filming of "Ragtime" at Connecticut Valley Railroad in Essex.

Walt Disney Productions wants to film, in Connecticut, a field of wild flowers surrounded by deciduous trees--no evergreens.

Michael Ross Productions wants a farm house of the 1880s, on a flat parcel of land, preferably with a windmill nearby.

Vigilante Productions requests a prison, with two-tier cellblocks, for that Rikers Island look.

Woody Allen's company inquires after a Munich railway station lookalike.

Requests have been logged for a mountain that looks like a western mining site, a sand dune (in Connecticut!), a small airport with a 1940s hangar, a Japanese exterior, a residential area that could pass for Chicago, an old theatre marquee with fancy neon and rippling lights.

These and other requests come to Charles Norwood, Public Information Supervisor in the tourism office of the State Department of Economic Development. Along with his tourism promotion functions, Norwood serves as "film locations liaison" for the department and the State. The service is listed in such sourcebooks as On Location and the New York Production Manual, as well as ads and listings in trade journals.

And he gets calls. Norwood says most of the requests come from companies in New York, but Los Angeles also is heard from. The number of contacts has grown steadily since 1979, when the state film log was started.

Why have a film location service? Economic Development Commissioner John J. Carson explains that it's part of the purpose of his agency: to promote the State's economy by bringing in jobs and money.

"Film makers do both," he says. "A company on location pours hundreds of thousands of dollars into the local economy. Producers of 'Ragtime' hired 500 extras for three days' filming in Essex. And they fed some 700

people, cast, crew, and extras, during that time."

Another example Carson cited was "The World According to Garp." While the filming took place on Fishers Island, cast and crew were lodged in Connecticut.

"A hundred hotel rooms rented for a month; three meals a day and ferry transportation from New London to Fishers Island. It adds up," Carson says, "and as demand continues to increase we hope to add more resources to support this exciting opportunity."

While a few feature films have been shot entirely in the State, Norwood notes that more and more segments are being filmed here: "Promises in the Dark" used West Hartford, Manchester, and Vernon locations, reportedly spending some \$2 million in the State in a period of a month.

Television use of Connecticut ranges from the soaps--several episodes of "All My Children" were done in Fairfield County--to PBS' Great Performances--the Hartford Stage Company production of Edward Albee's "All Over." Dramatizations of John Cheever short stories were filmed in Connecticut, as was Frank O'Connor's "Guests of the Nation," starring Connecticut resident Frank Converse.

But Norwood says that State locations are most often used for TV commercials. Besides a wide variety of settings--shoreline, woodland, hillside, urban, rural--Connecticut's most compelling attraction is proximity to New York, where most of the commercials are conceived.

Pepsi Cola, Pabst Light Beer, Mobil Oil, Carefree Gum, Mountain Dew, Michelob, Datsun, and Milton Bradley are some of the names dropped in the report on filming activities in the State.

The Connecticut operation currently consists of a directory listing sources for everything from lunches to camera repairs, a modest program of advertising and public relations, and the input of staff,

as available, to handle specific requests. A new edition of the "Connecticut Film Makers Directory," Norwood says, is now at the printer and will be available next month.

Members of the tourism office staff help out in times of need. State Travel Director Barnett D. Laschever took a call one afternoon from an advertising agency wanting a covered bridge. Laschever said, "There's a perfect specimen at West Cornwall. It's all yours." It wasn't that simple. The producer also needed a hay wagon, a horse to pull it, a state trooper to stop traffic during shooting, and a 10-foot ladder for the cameraman to shoot from. It was necessary, furthermore, to get Department of Transportation permission to take down the too-modern marker at the bridge entrance. Finally, just before filming began, Laschever, in a three-piece business suit, found himself carrying bales of hay across a field to fill the wagon to the art director's specifications.

On the front lines of the locations campaign, Norwood allows that the work is never dull. One company wanted only a giant water truck for a rain scene. Another wanted a flat-iron building with a lunch counter to re-create Hooper's painting "Nighthawks." Not all the stories have happy endings.

One group was searching for a man-made tunnel in Norwalk that had been a stop on the Underground Railroad. Norwood found the tunnel, but he also found that it wasn't built until after the Emancipation Proclamation and could not have been part of the slaves' escape route.

Norwood prefers to remember the time a producer called -- they always call; moviemakers have no time to write letters--wanting to know if Connecticut had a quaint 19th century New England seaport.

"Bingo," Norwood replied. "It just so happens. . . ." And there he was, promoting Mystic, the State's major tourist attraction, as a film location. ■

nature notes

by penni sharp

The night beat

Connecticut residents share their environment with a relatively large variety of mammal species. While most of us are familiar with mammals such as rabbits, skunks, raccoons, woodchucks, and squirrels, there are many others in our midst which are seldom seen and thus are less well known.

Becoming acquainted with mammals is a great deal more challenging than, for example, learning to watch birds. With patience and a pair of binoculars, novice birders can learn to recognize many avian species. Field study of mammals is somewhat trickier. Many of these animals are nocturnal and, in addition, they may be secretive and wary. This makes direct observation challenging, if not downright impossible. Knowledge of the presence of many of our native animals often depends upon how keenly one is able to note tell-tale signs such as food piles, tracks, nests, or scats.

There are, of course, some animals which, despite being chiefly nocturnal, are bold enough to come into close contact with humans. Many suburbanites can report on the raccoon which rivals Houdini when it comes to opening a garbage can lid, no matter how securely it's locked. Rabbits and woodchucks, active both day and

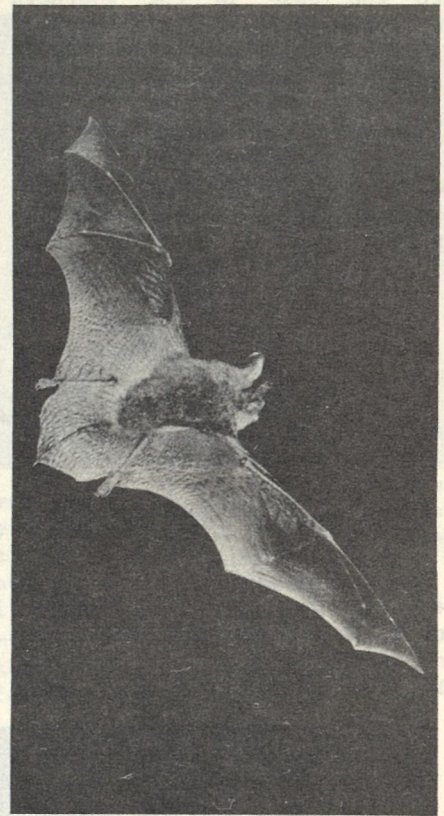
night, show little fear when given half a chance to forage on garden vegetables. Skunks, too, will approach human habitations for close encounters which are not soon forgotten. But there are many other mammals on the night shift which are seen far less often.

Among the most interesting animals whose circadian rhythms schedule them to be active at night and at rest by day are the bats. Bats belong to the order Chiroptera. They are the only mammals that are true fliers. Thin membranes connect the fingers of a bat to its arms, sides, legs, and tail and enable the bat to fly. The thumb remains free. Another unique feature of bats is the tragus, a leaf-like formation inside the ear.

In flight, bats emit high-pitched squeaky sounds which are inaudible to human ears. These sounds bounce off objects and are echoed back to the bat. The tragus aids them in picking up these sounds. This phenomenon is called "echolocation," and it enables bats to fly in total darkness without running into obstacles. During the day, bats roost upside-down, hanging by their feet, in caves, rock crevices, hollow trees, or behind loose bark or shutters.

The diet of bats found in Connecticut consists exclusively of insects, and for this reason they are extremely beneficial. At night, bats fill the niche that is occupied by insect-eating birds, such as swallows, during the day. Bats have few natural enemies; however prolonged periods of cold, rainy weather which prevent insects from flying can take a toll on bat populations.

In Connecticut, several species of bats are known to occur including the little brown myotis (Myotis lucifugus). This species is colonial rather than solitary and roosts in buildings or hollow trees. It has an erratic and somewhat feeble looking flight pattern and captures insects on the wing near forests or water. It has glossy brown fur, and like other



Leonard Lee Rue III photos: little brown bat

myotis bats, a long, pointed tragus.

Unfortunately, bats are much misunderstood and often feared. Their presence should be welcomed as they are voracious consumers of insects. In Connecticut a rabid bat is unlikely, and they will not try to get into your hair.

Another nighttime creature which becomes airborne yet is not a true flyer is the southern flying squirrel (Glaucomys volans). A member of the squirrel family, Sciuridae, it belongs to the mammal order Rodentia. Within this family, which includes marmots, prairie dogs, ground squirrels, chipmunks, and tree squirrels, only the flying squirrels are nocturnal.

The other species, the northern flying squirrel (Glaucomys sabrinus), is considered rare in Connecticut which lies at the southern limit of its range. The two species are not quite similar in appearance but can be distinguished by the color of the belly hair: white

to the base in the southern flying squirrels and white at the tip only, dark at the base, in the northern species.

A fold of loose, furry skin that extends along its sides from the front to hind legs enables the flying squirrel to glide from tree to tree. Like many nocturnal animals, flying squirrels have large eyes. These animals sleep by day, often in an abandoned woodpecker cavity. They may also make a nest in a tree crotch, constructed with twigs, bark, and leaves. Occasionally, flying squirrels find their way into attics, which may annoy homeowners!

Flying squirrels have quite a varied diet, feeding on seeds, nuts, insects, bird eggs, and occasionally on carcasses. Their arboreal feats are appar-

ently quite considerable as glides of up to 125 feet have been reported.

If you are interested in trying to catch a glimpse of a flying squirrel, knock on the trunk of a tree that has a woodpecker hole present--if you are lucky, a flying squirrel may poke out its head.

Other nocturnal members of the order Rodentia are the white-footed mouse and the jumping mouse. The white-footed mouse (Peromyscus leucopus) is a wide ranging, common species. The members of this genus are brownish above and white beneath and distinguished by their white feet. Their tails are long and furry. Like the flying squirrel, the white-footed mouse has large eyes. They locomote by leaping and, if frightened,

will vibrate their forepaws to produce a drumming sound.

Their diet consists chiefly of seeds, berries, nuts, and insects, and they store nuts and seeds. White-footed mice construct nests of dry vegetation lined with plant down. They locate nests in many types of sheltered places such as logs, stumps, old bird nests, or old buildings. They are quite prolific, producing from two to six young per litter as often as four times a year.

The meadow jumping mouse (Zapus hudsonius) belongs to a group of small, delicate mice that have large hind legs and extremely long tails. The meadow jumping mouse's head and body are about three inches long, while its tail can be from four to five inches in length. These mice are able to leap distances of up to six feet. They have olive-yellow sides with a darker band down the spine and white underparts.

These nocturnal mice are secretive and not as common as the white-footed mouse. The preferred habitat of this particular species is a low meadow. They feed on insects, seeds, and fruits. In winter, they hibernate in a burrow nest below the frost line. In summer, jumping mice nest on the surface, building round structures of leaves and grass lined with finer material. These small jumping creatures may be mistaken for frogs and, in fact, will swim readily.

Another interesting nocturnal mammal native to Connecticut is the short tailed weasel (Mustela erminea). Also known as an ermine, this small weasel is dark brown with white underparts in summer and white in the winter. The tip of the tail is always black.

The short-tailed weasel belongs to the order Carnivora and is a member of the weasel family Mustelidae. Like other members of this family it has a long slender body with relatively short legs and small rounded ears. Males of this family are often considerably larger than females, and this is true for the short-tailed wea-



Flying squirrel

sel. Its habitat is generally in brushy or wooded areas, usually near water. This weasel can swim and climb well. It is strictly a meat eater, feeding primarily on mice.

This particular weasel rarely takes poultry, and, in fact, its presence should be considered beneficial as it is an excellent "mouser." Its minute and helpless young number from four to eight. Weasel dens are located in ground burrows or beneath stumps or occasionally old buildings. The nest is often lined with mouse fur.

These are but a few of the animals that range abroad in the

Irene Vandermolen: short-tailed weasel



darkness while we are active in our homes by electric light or are lying fast asleep. Although it may be difficult to actually observe some of these creatures,

you may find traces of their presence--tracks, nests, food caches--and thus know that the out of doors teems with activity, both day and night. ■

AIAI

From page 6

12,000 to 15,000 school children visit the center each year.

Though the AIAI is concerned mainly with Indian prehistory and history, it is also concerned with keeping Indian traditions alive in the present. To this end the Institute staff teaches Indian skills and crafts in workshop sessions offered throughout the year. Leatherwork, beadwork, fingerweaving, dancing, and basket weaving are only a few of the crafts taught at the workshops. Other sessions may be offered in macro photography, how to get quality photos of plants and animals, or how to collect, dry, and preserve plant specimens.

The Institute designates one week a year as "Indian Week," when Indians come from in and out of state to demonstrate their crafts. These annual conferences are often the source of the craft techniques taught at the workshops. In addition, the Institute's Native American Indian Advisory Committee, a coalition of local tribesmen, meets with AIAI staff twice a year to act as consultants on all of the center's activities.

Among the staff the Institute's banded slate birdstone logo, made 2,000 to 2,500 years ago, symbolizes everything that

is mysterious and beautiful about Indian culture. Outside the Institute the logo represents excellence in archaeological research and expertise in Indian history.

The AIAI has been the recipient of numerous national awards, among the more prestigious of which are the U.S. Department of Interior's Heritage Conservation and Recreation Service Achievement Award, given in 1980, and the Phoenix Award of the Society of American Travel Writers, given in 1981. Both inside and out of the Institute, the logo is a symbol that commands respect--for a people with a lifestyle in harmony with the land and for a dedicated group of experts willing to share their knowledge of the native peoples of the Northeastern United States. ■

Bats

From page 2

The truly enlightened homeowner may even want to consider keeping bats around. Europeans build bat-houses in their back yards so they can take advantage of these insect-eaters. Bats can snag up to 500 insects an hour.

Even if you can't bring yourself to cultivate a bat population in your attic, at least refrain from slandering these gentle animals: they've unfairly suffered the slurs and

abuses of their human neighbors for too long. ■

New atlas includes all Connecticut "topo" maps

The DEP's Natural Resources Center has just published a valuable new atlas that contains all Connecticut topographic quadrangles, at a scale of 1:50,000, in a single volume. Prepared to provide an inventory of surface reservoirs and ground water wells and springs used for public water supply, the atlas also delineates drainage basin boundaries of water bodies and watercourses in the State.

A must for planners, technicians, and State and municipal officials, "Atlas of the Public Water Supply Sources & Drainage Basins of Connecticut" is also a useful general reference book for hikers, hunters, etc.

To order, send \$10 plus .75 sales tax for each copy plus \$1 handling charge per order to: Publication Sales, Department of Environmental Protection, Natural Resources Center, 165 Capitol Avenue, Rm. 555, Hartford, CT 06106. Make checks or money orders payable to "Department of Environmental Protection. ■

CAM NEWS

Windows on the Thames: some coastal programs along the riverfront

Out in the eastern part of the State, about 15 miles inland from Long Island Sound, there's a very special section of Connecticut's coastline. This is where the Thames River officially begins--where the Shetucket, the Yantic and the Quinebaug Rivers flow together. Fanning out around the upper

reach of the Thames are four towns that are involved in a different kind of coastal planning.

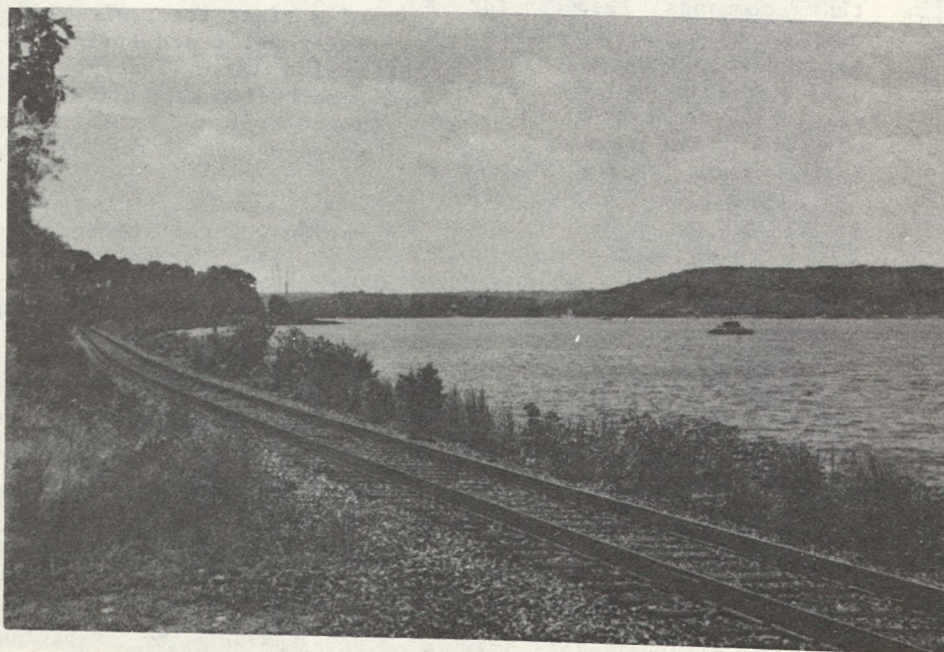
Montville, Norwich, Preston, and Ledyard are among those Connecticut coastal towns that front a river, rather than Long Island Sound. Consequently, they must address specifically "riverine" concerns as they work toward putting together their local coastal programs. Of course, the four towns have individual features and interests, but they also share the benefits and the responsibilities of being located along the Thames, a fragile estuarine embayment.

Estuarine embayments in Connecticut are protected coastal bodies of water having an open connection to Long Island Sound. As the salt water of the

Sound mixes with the fresh water of the Thames, a nutrient-rich environment is created that provides an excellent habitat for fish and waterfowl--ask any local fisherman where to find the best spots for bluefish, stripped bass, and winter flounder. Estuarine embayments such as the Thames contain both inland and tidal wetlands--bogs, salt marshes, and lowlands that also serve as breeding grounds for wildlife. These areas must be protected from indiscriminate filling and development.

The four towns also share the mixed blessing of the railroads. By the late 1800s, the area was a bustling textile center, and the Central Vermont Railroad stretched up the western bank of the Thames while the Providence and Worcester Line ran along its eastern shore.

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A view from Ledyard's riverbank south toward Point Breeze. Location of railroad tracks often makes access to the Thames difficult.

Ron Rozsa



By Leslie Bieber,
Citizens' Participation Coordinator

For Your Information

Participate as a volunteer

Too often, those of us involved in "public participation" think of it in terms of citizens who testify at public hearings or who provide input into the DEP's policies and projects. There is another type of participation, however, that has enabled the Department to offer services to the general public or to carry out scientific research or data gathering that might otherwise have gone undone. Last year, almost 700 citizens across the State volunteered their time and expertise to help with various DEP programs.

The largest number of volunteers serve as instructors for the Conservation Education/Firearms Safety courses offered by the Wildlife Unit. These courses are required of anyone who has not held a hunting license within five years of his application to hunt. Emphasis is placed on safe hunting techniques, field etiquette, and conservation practices. Over 200 people contributed better than 4,000 hours to help their fellow hunters become skilled, considerate sportsmen.

A similar service is performed by the State's Boating Safety Instructors. Knowledge-

able boaters, including members of the U.S. Coast Guard Auxiliary and the U.S. Power Squadrons, teach the safe handling of boats to adult and youthful operators. The result is an increased proficiency in seamanship and a possible reduction in the number of boating accidents in Connecticut's waters.

There are other, more exotic programs which attract volunteers to the DEP. Citizens who care for sick, injured, or immature wildlife can be issued custodial permits on either a yearly or a case-by-case basis. Not everyone can qualify for these permits; applicants must have proof that they can properly maintain an animal until it is healthy. Many of the permit holders are members of the Audubon Society or a similar conservation organization. Other people interested in wildlife worked with the DEP's Conservation Officers in erecting and checking wood duck nesting boxes.

State residents who may be lawyers, engineers, planners, or businessmen contribute their experience in seminars and workshops. During the past year, they spoke on such topics as ground-water issues, recycling, and land use. Professionals in the field of pest control help DEP personnel administer oral examinations for pesticide licensing.

Another important source of volunteer labor comes in the form of student interns. The students often work in areas compatible with their majors. One conducted laboratory experiments for the Water Compliance Unit, while others prepared materials for the Information and Education Unit. Several articles in the Citizens' Bulletin have been authored by students from local colleges and universities. The Adjudications Unit benefited from the legal research provided by another intern.

Perhaps the most visible group of helpers are those who work in the State Parks. The interpreters who lead nature walks, for instance, are often there because they want to share their love of the outdoors with park visitors. Several parks, such as Putnam Memorial, offer demonstrations or information programs. Area crafts persons came to Putnam for nine weeks during the summer to give lively examples of the skills possessed by Colonial New Englanders.

If you are thinking to yourself, "I don't have any special knowledge or experience to give," think again. Volunteering is as easy as picking up a bit of litter in a park or forest. It can give you a sense of accomplishment and will ultimately benefit all of Connecticut's citizens. ■

Muzzleloader more of a challenge than a modern rifle

By Frank Disbrow, DEP Conservation Education/Firearms Safety Coordinator

The first type of gunpowder was called black powder. It was probably a simple mixture of charcoal, sulphur and salt peter (potassium nitrate). The same ingredients are used in black powder today.

Nobody knows exactly when black powder was invented--or by whom. History claims it first was used by the Chinese to make firecrackers. Apparently it was not used in firearms until around the year 1350.

The first guns were simple cannons. Later, better guns and firing systems were developed. The firing systems were called locks. All firearms used black powder until about 1890.

As a group, these guns were called muzzleloaders. They were so named because the powder and either the ball or shot were loaded down the muzzle. Modern guns are loaded at the breech (or rear) and are called breech-loaders.

Most of the early muzzleloaders used in this country were flintlocks. They were fired when a flint struck a metal plate or frizzen. The sparks from the flint and metal plate ignited the powder in the priming pan which flashed down the barrel and fired the gun.

About 150 years ago a much better firing system was developed. It used a small cap coated inside with an explosive mixture. It was called a percussion cap. When struck by the hammer of the gun, it shot a jet of flame into the barrel and ignited the gun powder. Such guns were--and still are--called percussion cap guns or caplocks.

Today hundreds of thousands of muzzleloading guns are used for both hunting and target shooting. Many states provide special seasons during which you can hunt big game with a muzzleloader. There also are a number of target matches in which only muzzleloaders are used.



Frank Galinat, of Coventry, in the authentic 18th Century dress of the Knowlton's Rangers, shows a muzzleloader during firearms safety course.

Why such interest? The muzzleloader is a challenge to shoot. It requires more skill to load than a modern rifle or shotgun. It demands from the hunter more accuracy and care. Most muzzleloaders are single shot. If the one shot is missed, the game will escape. Hunting with a muzzleloader means you must be a better and more careful hunter and a better shot.

How to select a muzzleloader: Some muzzleloaders used now are original guns, made many years ago. Most are replicas. The copies are made of modern steel by modern methods. They are generally stronger than the older guns. But they still look like the originals.

Any original muzzleloader should be checked carefully by a black powder expert before it is shot. It may not be safe. Black powder is very corrosive. It may have destroyed enough metal that the gun no longer is safe to shoot.

Old black powder shotguns can be very dangerous. They were made of a steel called Damascus. Damascus steel barrels are very handsome--and very weak. They are made of soft strips of steel. These are twisted into a tube, then welded together to form the barrel. Black powder corrosion softens the welds. The barrel becomes weak and can blow up.

It is better to use a new muzzleloading replica. They are not very expensive. The best should cost about as much as a modern rifle.

Such guns are available in rifles, pistols, and shotguns. Most popular muzzleloading rifle calibers are .36, .45, .50, and .54 caliber. Most popular pistol calibers are .36 and .45 caliber. Most muzzleloading shotguns are 12-gauge.

Use only black powder: One thing you must remember. No muzzleloader, old or new, should be fired with anything except black powder. There is no substitute. It is the only powder safe to use in a muzzleloading firearm.

There are four sizes of black powder. The sizes are called granulations. Each size--or granulation--is shown by a series of letter F. Each size has a particular use in shooting muzzleloaders.

Fg (or single F) is the largest size or granule. Its use is limited to very large muskets or cannons.

FFg (or double F) is probably the most popular powder for large caliber rifles. Best in calibers from .45 to .58, it also works well in muzzleloading shotguns.

FFFg (or triple F) is perhaps the best all-around black powder. It is used in all caplock revolvers. Also in single-shot pistols and in small caliber rifles. It works best in muzzleloaders up to .45 caliber. It can be used in larger rifles with extreme care.

FFFFg (or four F) is a very fine powder. It is used only to prime flintlocks. It burns quickly. It creates great pressure. It should not be used for actually loading black powder guns.

Percussion Caps: Most modern muzzleloading firearms are caplocks. They are fired by means of a percussion cap. This is not much different from the primer in a modern cartridge.

An explosive mixture is coated on the bottom of a small, round, hollow cap. The hollow part fits over the nipple of the caplock. When the hammer strikes this, it fires a jet of flame into the barrel and burns the powder.

These caps are made in different sizes. Be certain to get the right size for your muzzleloader. If the cap is not tight on the nipple, it may fall off. Most muzzleloading rifles use a standard size No. 11 cap.

Equipment: Some special equipment is needed to shoot a muzzleloader.

A first "must" is patches. These are cloth, usually linen or cotton. They are moistened with some type of grease or liquid. They are wrapped around the ball before it is pushed down the barrel. This forms a tight seal against the gas created when the powder burns. It also makes the ball fit very tightly in the barrel and spin when it is fired.

You will need a sharp knife to trim the patches. This is called a patch knife. You will need a powder flask or powder horn to carry the powder. Most hunters prefer a powder horn.

A powder measure is needed also. Powder should not be poured into the barrel from the powder horn. It should be poured into the powder measure, then into the barrel. There still could be a hot spark in the barrel from the last shot. This could set fire to the entire horn full of powder and cause an accident.

Anybody who hunts with a muzzleloader should have a nipple wrench to remove the nipple, plus a spare nipple. Jags and patches should be handy to clean the gun. A long and a short starter also should be included. These can be carried in a hunting pouch. The trappers and mountain men called this pouch a "possibles" bag.

Look Before Loading: It takes a long time to load a muzzleloader. Many of the old guns

were left loaded for this reason. They may still be loaded. Every muzzleloader should be checked carefully to make sure it is unloaded and safe.

First point the muzzle in a safe direction. Then place the hammer on half-cock or safe position. On a percussion lock, make sure there is not a cap on the nipple. Be certain there is no powder in the flash pan of a flintlock.

If you are sure the gun is not primed, stand it upright with the butt on the ground between your ankles. Lean the muzzle away from your body.

Remove the ramrod and insert it into the barrel as far as it will go. Mark the ramrod at the muzzle and take it out of the barrel. Place the ramrod along the outside of the barrel. Put the mark even with the muzzle. Now you can see how far the tip of the rod has gone down the barrel.

If the tip reaches the flashhole of a flintlock or the breech plug of a caplock, the barrel is empty. If it has not gone that far into the barrel, the gun is loaded.

Take it to a good black powder gunsmith to have it unloaded. Do not blow down the barrel to see if the gun is loaded. This doesn't always work. Besides, placing the mouth over the muzzle is very dangerous—it is against all common sense rules of safety in handling firearms.

Loading: First be sure the gun is clean. Wipe the barrel with a cleaning patch. This will remove the oil. Oil in the barrel can ruin the powder charge. If this happens the gun may not fire or may hang-fire and cause an accident.

Place a percussion cap on the nipple. Pull the trigger and fire this through the empty barrel. (Keep the barrel pointed in a safe direction.) This will burn away any oil in the nipple and breech plug. Do the same thing with a small amount of powder in the flash pan if

you are shooting a flintlock. The force of the cap exploding will cause grass blades to bend slightly, a sure sign the barrel and breech are clear.

Now, you are ready to load. Stand the rifle upright. Place the butt on the ground between your ankles. Lean the muzzle away from face and body. The ramrod should be toward you, the sights away from you.

Pour your black powder from your horn or flask into your measure. Then plug the horn or flask. Place it away from the gun. Pour the powder from the measure into the muzzle of the gun.

Remember, do not pour powder directly from the horn or flask. It may have an adjustable measure on the spout. Do not use it. Use a separate measure instead. Black powder is very easy to ignite. Never smoke while loading a black powder gun. Make sure that black powder never is placed near any fire.

The powder charge is now in the barrel. Tap the side of the barrel. This will shake all the powder to the bottom.

Place a greased patch over the muzzle. Set the ball on top of the patch. There is a flat spot on every lead ball. This is called the sprue. It should be placed at the top, pointing up.

Hold the ball in place. Use the short starter and drive it into the barrel. It should be even with the muzzle. The cloth patch now forms a cover around the ball. This has caused the ball and patch to match the rifling in the barrel.

Part of the patch may show above the muzzle. Use a sharp patch knife to trim this even with the muzzle. Take the long starter and place it against the ball. Hit the starter hard with the palm of the hand. This will drive the ball four or five inches down the barrel.

Place the ramrod down the barrel against the ball. Push

Laying down the law . . .

By Rachel Towbin, DEP Legislative Liaison

The following are acts passed during the 1982 session of the General Assembly of particular interest in the environmental area.

PA 82-91, AN ACT TO IMPLEMENT THE APPROPRIATIONS ACT FOR THE FISCAL YEAR ENDING JUNE 30, 1983.

Gives DEP Commissioner authority to adopt regulations to charge fees to cover reasonable costs of permit applications and monitoring for permits and programs administered by Water Compliance, Water Resources, Air Compliance, Hazardous Materials Management, and Planning and Coordination/Coastal Area Management units. Also changes fee schedule for many hunting, trapping, and sport fishing licenses. Establishes Connecticut Conservation Corps program, with revenues from fee increases going toward funding. Authorizes DEP to promulgate regulations for standards for salmon, turkey, and pheasant management.

PA 82-1 (June session), AN ACT CONCERNING THE AUTHORIZATION OF BONDS OF THE STATE FOR FLOOD RELIEF PURPOSES.

Authorizes \$37 million for the relief of damage caused by the June 1982 flood including: \$20 million for state and local shares of federal public assistance; \$4 million added to the \$500,000 bonding authorized for the DEP in SA 82-46 for dams, including repair, restoration, reconstruction, demolition, or replacement, and related dredging; also a study of State policies and resources related to dam safety.

SA 82-10, AN ACT MAKING APPROPRIATIONS FOR THE FISCAL YEAR ENDING JUNE 30, 1983.

Central Office:	\$3,887,298
Division of Conservation	
& Preservation:	\$12,371,883
Division of Environmental	
Quality:	\$2,817,739
Total	\$19,076,920

Includes restoration of funding for Noise Control Program and Indian Affairs Coordinator.

PA 82-250, AN ACT CONCERNING COASTAL MANAGEMENT.

Clarifies definitions, exemptions, and administrative aspects of Connecticut Coastal Management Act.

PA 82-296, AN ACT CONCERNING THE PRESERVATION OF THE UPPER CONNECTICUT RIVER AREA.

Finds that the upper Connecticut River and the towns abutting the river possess unique scenic, hydrologic, ecological, agricultural, recreational, and historical value. Finds it in the public interest to preserve such values. Establishes Connecticut River Assembly.

Division of Conservation and Preservation

PA 82-134, AN ACT CONCERNING THE REQUIREMENT FOR FISHWAYS, effective October 1, 1982.

Authorizes the Commissioner to require provision of fishways in conjunction with construction, rebuilding, or substantial repair of a dam or stream obstruction, if necessary to protect fisheries resources.

PA 82-142, AN ACT CONCERNING FOREST LAND OWNED OR MANAGED BY THE STATE, effective October 1, 1982.

Clarifies the Commissioner's duties regarding forestry. Ex-

pands forestland subject to DEP management to all woodlands owned by the State. Authorizes DEP to sell wood, timber, and other products from State woodlands.

PA 82-178, AN ACT CONCERNING THE MANAGEMENT OF INDIAN AFFAIRS, effective October 1, 1982.

Authorizes the Commissioner, with the advice of the Indian Affairs Council, to manage the State's interest in Indian affairs not otherwise specified by existing statute.

PA 82-223, AN ACT CONCERNING INFRACTIONS, effective October 1, 1982.

Establishes \$25 as the minimum fine for most infractions. Makes violations of boat registration requirements an infraction. See also PA 82-348, "An Act Concerning Penalty Provisions for Violations of Boating Safety Registration Requirements."

PA 82-255, AN ACT CONCERNING VIOLATIONS OF REGULATIONS ON STATE PARKS, PUBLIC HUNTING AND FISHING LANDS AND WATERS AND SPORT FISHING REGULATIONS IN THE MARINE DISTRICT, effective October 1, 1982.

The Commissioner of Environmental Protection may adopt regulations for the preservation and protection of lands within his jurisdiction. This act raises the penalty for violations from \$50 to \$99. The act also allows the Commissioner to bar any person convicted of a violation of the regulations, or who forfeits a bond taken to insure a court appearance, from entering any State Park for a year.

The act specifies that any fish and game license is subject to suspension for violations of fish and game laws and regulations and not just the particular license under which the violations occurred. This act increases from 15 to 30 days the period for which the commissioner must suspend a license for a first offense.

Under prior law, a person who obtained a permit to which s/he was not entitled or fished, hunted, or trapped when his or her license was under suspension was subject to a penalty which

increased depending on the length of the period for which his or her license was suspended. This act subjects a person to a fine of between \$100 and \$200 unless the suspension is indefinite, in which case the prior penalty is retained (\$200-\$500 and/or imprisonment for up to one year).

Violation of regulations applicable to specific hunting lands or waters and regulations concerning sport fishing in the marine district does not subject a person to license suspension.

The act also specifies that, if the Commissioner suspends any one fish and game license, he may also suspend any other such license held by that person, including the right to obtain a new license.

Under prior law, a person who violated regulations relating to specific hunting and fishing lands such as use of boats, creel and bag limits, and closed seasons, was subject to a fine of up to \$100 and revocation of any fish and game license for up to a year. This act makes violations an infraction.

The act also makes violation of regulations concerning sport fishing in the marine district an infraction.

PA 82-283, AN ACT PROVIDING THAT VESSELS DOCUMENTED BY THE U.S. COAST GUARD ARE SUBJECT TO REGISTRATION REQUIREMENTS IN CONNECTICUT, effective from passage, May 26, 1982.

Requires that boat owners holding a valid marine document issued by the U.S. Coast Guard for boats used in Connecticut for more than 60 days a year comply with Connecticut boat registration requirements.

Exempts boats owned by a flotilla of the U.S. Coast Guard Auxiliary or owned by a non-profit corporation on behalf of such a flotilla.

PA 82-348, AN ACT CONCERNING PENALTY PROVISIONS FOR VIOLATIONS OF BOATING SAFETY AND REGISTRATION REQUIREMENTS, effective from passage, June 4, 1982.

Makes non-compliance with boating safety laws contained in CGS 15-133 and boat registration requirements (Sec. 2) a violation subject to fines of \$25 to

\$200 rather than an infraction. Provides that violation of boating laws for which no penalty is specified is an infraction.

Increases fine for operating a vessel when prohibited from doing so because of a conviction for reckless or negligent operation of a vessel while under the influence of liquor or drugs from \$100 to \$200.

Adds condominiums and cooperative marinas to those entities renting, leasing, or assigning slips, dry storage moorings, or other space for vessels which must maintain a list of all such vessels not registered in Connecticut. Violation of this list requirement is subject to a \$200 fine.

Section 5 makes violations of boat registration requirements an infraction (in conflict with Section 2 of this act). Also see PA 82-223, "An Act Concerning Infractions."

PA 82-366, AN ACT CONCERNING LICENSES FOR FIREARMS HUNTING, ARCHERY HUNTING, TRAPPING AND FISHING, effective October 1982.

Creates new "junior" license categories for persons 12 to 16 years of age for firearms hunting, archery hunting, and trapping licenses.

Authorizes issuance of non-resident trapping licenses.

Establishes separate firearms hunting, archery hunting, and trapping licenses instead of the one hunting license existing under present law. A combination firearms hunting and fishing license will continue to be available.

PA 82-421, AN ACT CONCERNING CERTIFICATION OF OPERATORS OF BOATS, effective January 1, 1983, except Section 3 which is effective January 1, 1984.

Requires those convicted of more than one violation of CGS 15-133 or 15-134 within any two year period to obtain a boating safety certificate before operating a motorboat with greater than five horsepower.

Provides for rate credits on insurance policies, other than home owner's, covering motorboats used for recreational purposes, upon proof of successful completion of a DEP approved course in safe boat handling by the principal operator(s).

Section 3 raises from 16 to 18 the age under which one must obtain a boating safety certificate before operating a motorboat of greater than five horsepower.

PA 82-436, AN ACT CONCERNING THE REGISTRATION OF VESSELS AS REQUIRED UNDER PUBLIC ACT 81-423, effective from passage June 8, 1982, except Section 10, effective January 1, 1983, and

PA 82-472, AN ACT ADOPTING THE REVISOR'S TECHNICAL CORRECTIONS TO THE GENERAL STATUTES AND CERTAIN PUBLIC AND SPECIAL ACTS (Section 32), effective from passage, June 14, 1982.

Requires owners of motorboats having a valid marine document issued by the U.S. Coast Guard and used in Connecticut for more than 60 days a year to comply with registration requirements.

Makes an application for marine dealer's registration number subject to DEP approval and raises the fee from \$15 to \$25.

Upon approval by the Commissioner of Motor Vehicles, return of old registration, and payment of a \$3 fee, a person may change the type of registration he has from a number to a decal or vice versa.

Increases the amount of money deposited in the boating fund from \$600,000 to \$800,000. Makes expenses by towns for vessel theft prevention or recovery, search, and rescue reimbursable from the boating fund.

Establishes fees for certain types of vessels, taking them out of the fee schedule: 1) pontoon boats except houseboats, \$40; 2) any canoes with motors, \$15; 3) vessels owned by non-profit organizations, \$15; 4) (Section 10, effective January 1, 1983) any vessel less than 15 feet long with a motor of less than 15 horse power, \$15.

SA 82-14, AN ACT CONCERNING THE CLOSING OF POQUETANUCK COVE TO WATERFOWL HUNTING, effective October 1, 1982.

Amends a 1969 Special Act closing Poquetanuck Cove in Preston and Ledyard to waterfowl hunting and including it under the provisions for wildlife refuges and closed areas, CGS 26-101.

SA 82-21, AN ACT CONCERNING HYDROELECTRIC DEVELOPMENT AT THE EAGLEVILLE DAM SITE ON THE WILLIMANTIC RIVER, effective October 1, 1982.

DEP Commissioner may, with approval of the Attorney General, grant an easement or lease for hydroelectric development at the Eagleville dam site on the Willimantic River. Reasonable compensation is required.

SA 82-29, AN ACT CONCERNING THE REMOVAL OF IMPOUNDMENTS AT BARN ISLAND IN STONINGTON, effective July 1, 1982.

Calls for DEP to increase the flow capacity through impoundment number one at Barn Island Fish and Wildlife Area, study the effects of the increased flow, and study the feasibility of making similar flow improvements at impoundments two and three. Appropriates \$10,000.

SA 82-31, AN ACT TO IMPLEMENT THE SETTLEMENT OF THE MASHANTUCKET PEQUOT INDIAN LAND CLAIMS, effective upon enactment of legislation by the U.S. providing for extinguishment of land claims by the Mashantucket Pequot tribe and of all other Indian land claims in Ledyard.

Confirms title in fee simple in the Mashantucket Pequot tribe of the land making up the Mashantucket Pequot reservation in the Town of Ledyard and releases any interest the State may have in that land. Authorizes the Governor to convey two parcels of land in Ledyard to the Mashantucket Pequot tribe.

Division of Environmental Quality

PA 82-79, AN ACT CONCERNING REGIONAL RESOURCE RECOVERY AUTHORITIES, effective October 1, 1982.

Permits regional resource recovery authorities to be created by joint resolution of two or more municipalities.

PA 82-80, AN ACT CONCERNING NOTIFICATION OF LEVYING SEWER ASSESSMENTS, effective October 1, 1982.

Requires water pollution control authorities to mail copies of assessments to owners of property affected in addition

to the newspaper notice already required. The mailing shall include the date the assessment was filed and that appeals from the assessment must be taken within 21 days of the filing.

PA 82-111, AN ACT CONCERNING HEARINGS ON POLLUTION ABATEMENT ORDERS AND DISCHARGE PERMITS, effective October 1, 1982.

Clarifies that applicants for permits for discharge to the waters of the State may have only one hearing and one appeal.

Clarifies that those aggrieved by an order to abate pollution or by denial of a water discharge permit without prior hearing have only 30 days from the issuance of the order or denial to request a hearing.

Clarifies that appeals by those aggrieved by a final determination of the Commissioner on an order to abate pollution or on a discharge permit must be initiated within 15 days from the issuance of the determination regardless of any other statutes.

PA 82-117, AN ACT CONCERNING THE REGULATION OF SUBSTANCES OR COMPOUNDS USED FOR SUBSURFACE SEWAGE DISPOSAL SYSTEM CLEANING, effective October 1, 1982.

Prohibits use and sale of sewage system additives containing toxic pollutants as identified by the EPA pursuant to the federal Water Pollution Control Act (33 USC 1317). Requires DEP to adopt regulations to carry out the provisions of this act.

PA 82-151, AN ACT CONCERNING WASTE OIL, effective October 1, 1982.

Defines "waste oil" and distinguishes it from waste petroleum substances contaminated by hazardous waste. Requires DEP permit for those in the business of storing or treating waste oil as well as its collection. Extends duration of these permits from one year to five years.

PA 82-158, AN ACT CONCERNING THE USE OF PESTICIDES, effective on passage, May 17, 1982.

Permits sale of restrictive use pesticides to certified commercial supervisors and private applicators only. This brings statutes into line with past practice and federal regulations. Prohibits use of unregistered pesticides.

PA 82-180, AN ACT CONCERNING ENVIRONMENTAL INFORMATION, effective October 1, 1982.

Authorizes Commissioner of Environmental Protection to disclose information relating to secret processes of manufacture or production ascertained by inspection, investigation, hearing, or otherwise, to the Environmental Protection Agency.

PA 82-191, AN ACT CONCERNING SUNKEN VESSELS IN TIDAL, COASTAL OR NAVIGABLE WATERS, effective October 1, 1982.

Enables the Commissioner of DEP, after consultation with the Commissioner of DOT, to consider sunken or grounded vessels lying within the limits of a river or harbor as encroachments, subject to CGS 25-7c to 25-7f, inclusive.

PA 82-209, AN ACT REPEALING THE EXEMPTION OF THE UNIVERSITY OF CONNECTICUT DISPOSAL FACILITY FROM CERTIFICATION FOR A HAZARDOUS WASTE FACILITY AND CONCERNING APPOINTMENTS TO THE CONNECTICUT SITING COUNCIL, effective on passage, May 20, 1982.

Provides for filing by appointees of any substantial financial or employment interests potentially conflicting with the discharge of their duties. Establishes procedure for appointment of substitute members if conflict of interest exists or if member is unable to serve because of illness.

PA 82-233, AN ACT CONCERNING THE UNDERGROUND STORAGE OF OIL, PETROLEUM AND CHEMICAL LIQUIDS, effective October 1, 1982.

Authorizes the Commissioner of DEP, in consultation with the Commissioner of Public Safety, to establish, by regulation, standards and criteria for non-residential storage of oil, petroleum, and chemical liquids. Regulations may include design, installation, operation, maintenance and monitoring requirements.

PA 82-240, AN ACT CONCERNING ORDERS BY THE COMMISSIONER OF ENVIRONMENTAL PROTECTION TO PROVIDE POTABLE DRINKING WATER, effective July 1, 1982.

Authorizes the Commissioner of DEP to order polluters of groundwater to provide potable

drinking water to those persons affected by the pollution. If more than one party is responsible, the Commissioner shall attempt to apportion liability.

If the party responsible for the pollution cannot be determined, or has no assets, the municipality may supply potable water and apply to the Commissioner for a grant of up to 50 percent of the cost (see PA 82-320). Orders are subject to a hearing and appeal pursuant to CGS 25-54a and 25-54p.

PA 82-320, AN ACT CONCERNING A TAX ON GENERATORS OF HAZARDOUS WASTE, effective July 1, 1982.

Assesses generators of hazardous waste required to file a manifest four cents per gallon of hazardous waste. Those assessed \$25 or less will be exempt from payment. Revenue collected will be deposited in the emergency spill response fund. Funds will be used to cover administrative expenses, to complete the inventory of hazardous waste disposal sites; they may be used to match federal superfund money or for grants to municipalities with ground water pollution to supply potable water under PA 82-240. Assessment shall terminate December 31, 1985.

PA 82-380, AN ACT CONCERNING SOIL AND WATER CONSERVATION DISTRICTS, effective July 1, 1982.

Raises the amount annually appropriated to each of the eight Soil and Water Conservation Districts from \$6,000 to \$9,000.

PA 82-390, AN ACT CONCERNING THE COUNCIL ON SOIL AND WATER CONSERVATION, effective July 1, 1982.

Council now consists of nine members plus seven ex officio members. It will be within DEP for administrative purposes only. The Commissioner of DEP, with the advice and consent of the council, as well as the council itself, may receive funds from any source and expend such funds for equipment, supplies, staff, and consultants.

PA 82-402, AN ACT CONCERNING WATER DIVERSION, effective July 1, 1982.

Requires those commencing diversion of Connecticut water

after July 1, 1982, to first obtain a permit from DEP. Those maintaining a diversion prior to or on July 1, 1982, are required to register with DEP. Existing diversions not complying with the registration requirement may be subject to permit requirements.

Act requires public notice of intent to file an application 30 days prior to actual filing and provides a timetable for DEP determination of completeness of the application, requests for additional information, commencement of the hearing, and issuance of the decision. If the decision is not issued within the required time, the application is deemed granted.

The act lists facts and circumstances the Commissioner shall consider including: the effect on public water supply; the effect on existing and planned water uses in the area affected; compatibility with State policies and programs for long-range planning and management of water resources; relationship of proposed diversion to economic development; effect on existing water conditions; effect on fish and wildlife; effect on navigation; the necessity for the diversion and the availability of alternatives; consistency of the proposed diversion with action taken by the Attorney General regarding interstate diversion.

A permit may be suspended or revoked if a violation is found and may also be suspended during a water supply emergency. Violations of this act are subject to legal action by the Attorney General on request of the Commissioner of DEP.

PA 82-460, AN ACT CONCERNING PRACTICES AND PROCEDURES WITHIN THE DEPARTMENT OF MOTOR VEHICLES, effective October 1, 1982.

Includes repeal of Section 14-164d which permitted a vehicle failing an emission inspection test in the first year of the testing program to be registered without being repaired. The repeal conforms to State Air Quality Implementation Plan requirements of a mandatory inspection and maintenance program in place by December 31, 1982.

Riverfront

From page 12

The railroads played an important role in the towns' early development, but today town planners are aware that the location of the railroad tracks and bridges often makes it difficult for people to walk to the riverbank or for them to navigate boats into the coves adjacent to the Thames.

Each of the towns has been working with the Southeastern Connecticut Regional Planning Agency (SCRPA) and, as you might expect, has adopted a slightly different approach to its municipal coastal program. Montville's coastal area is steep terrain, with winding narrow roads that offer startlingly beautiful views of the river. The town wants to preserve these scenic vistas as well as to maintain the rural character of the area. Tucked away in the northernmost corner of Montville's coast is Fort Shantok State Park, containing the historical Mohegan Indian Burial Grounds. Thousands of people visit here each year, and Montville considers it very important that its coastal plan protect and enhance all of the town's "windows on the Thames."

Norwich's coastal program calls for careful development of Hollyhock Island, a man-made piece of land located in the city's downtown area where the Yantic River joins the Thames. The city's planners would like to leave the northern end of the island for recreational activities such as fishing, picnicking, and strolling along the waterfront. The southern end of the island will house a marina, designed to encourage boating in the area. The city would also like to develop a waterfront park at the edge of the downtown district with a walkway to connect the central city with the marina on the island. Overall, Norwich's goal is to restore public awareness and enjoyment of the Thames.

Preston and Ledyard are working cooperatively to preserve a shared coastal resource. The Poquetanuck Cove rests in both towns, and planners from

the two towns are sharing their expertise to come up with a coastal plan for the cove that will benefit everyone. The most pressing concern is how quickly sediment is accumulating on the cove's floor. The water is less than ten feet deep now, and unless something is done eventually it may become too shallow for boating or fishing. Preston and Ledyard would also like to improve boat access between the cove and the Thames. They are working with the Providence and Worcester Railroad to explore the possibility of increasing the height of the railroad bridge that spans the entrance to the cove, a change that would allow most small boats to pass easily through to the river.

Although their approaches vary, the four towns along the upper Thames are working toward local coastal programs that will preserve valuable shoreline resources while encouraging citizens to enjoy the recreational opportunities provided by their historic river.

Muzzleloaders

From page 16

it firmly all the way to the bottom. It must rest against the powder. Do not bend the rod as it can break and hurt your hand. Do not slam or pound the ramrod to push the ball down the barrel. This could flatten the soft head. The ball might not shoot too straight.

The ball must be seated against the powder. To make sure this is done you should mark your ramrod. It should be marked at the muzzle when it is all the way down an empty barrel. It should be marked again for a target load. It should be marked a third time for a heavy hunting load. Mark it with ink or paint.

The ball may stick in the barrel above the powder. Do not shoot the gun. The air space between powder and ball can cause damage to the gun and the shooter.

If this happens, then it is okay to thump the ball with the

ramrod. This should drive it the rest of the way down the barrel. Then it can be fired at a safe target. After that, you can load again.

If this doesn't work, the ball must be drawn backwards out of the barrel, or the gun must be taken apart and the ball shoved forwards out of the barrel. It must never be fired in this condition.

Always be careful that a used patch does not smolder. It could cause a fire.

Hunting Safely With Muzzleloaders: Muzzleloaders all should be handled in the same careful way as any other gun. They should only be loaded at the firing line on a firing range or in the field hunting. The same safety rules apply to a muzzleloader that apply to any other firearm.

A muzzleloader cannot be unloaded by removing the cartridge, as can a modern rifle. If you are in an unsafe situation you should remove the cap from the nipple of a caplock. You should dump the powder from the flashpan of a flintlock and leave the frizzen open.

This should be done when you are crossing fences or going down a steep hill. It should be done when you meet another hunter. It should be done when you are returning to car or camp. When it is safe, the priming—powder or cap—can be replaced.

Muzzle Loading Language: Sportspeople who shoot muzzleloaders speak their own language. You already have learned some of the terms. They are the same as those used to describe modern firearms. Here are some of those you will hear most often.

Ball: Round lead ball used as a bullet in most muzzleloading rifles and pistols.

Ball Screw: This looks like a wood screw. It threads into the end of the ramrod. It can be twisted into the soft lead ball when it is inside the barrel.

Then the ball can be pulled backwards to unload the rifle when it has not been fired.

Breech Plug: Plug that screws into the rear end of a muzzle-loader's barrel. It seals the back end of the barrel.

Charger: Any container used to measure one exact charge of powder. It could be a powder flask...or a powder horn...or a powder dipper. Never use a charger to pour directly into the muzzle.

Flashhole: A very small hole that is open from the priming flashpan to the powder inside the barrel. Flame runs through this hole to set fire to the black powder.

Hang fire: A shot that does not fire immediately after the trigger is pulled. It does fire after a short delay. It is very dangerous. Always keep the rifle pointed in a safe direction.

Jag: This screws into the end of the ramrod. It is used with a patch to clean the barrel.

Patching: Cloth placed around the round lead ball when shooting a muzzleloader. It usually is cotton or linen (do not use synthetic fabrics). It makes the round ball fit tightly into the barrel of the gun. This makes it shoot more accurately. ■

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Legislation

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SA 82-28, AN ACT CONCERNING A STUDY OF STATE AGENCY AUTHORITY IN THE MANAGEMENT OF WATER RESOURCES FOR PUBLIC WATER SUPPLIES, effective July 1, 1982.

Establishes 17 member task force to make recommendations concerning the authority of State agencies in the management of water resources for public water supplies. An interim report is required by January 1, 1983, and a final report by February 1, 1984.

Report shall include evaluation of responsibilities of State agencies in water resource management for water supply; institutional structure of water supply utilities; conservation of water resources; ground water supply problems. ■

New publication lists tours

Program chairmen, den mothers, and others on the lookout for opportunities to visit manufacturing, health care, and other public facilities of general interest can get help from the State Department of Economic Development.

A new publication, "Industrial and Special Interest Tours," lists 25 possibilities, from North American Philips Corporation in Essex -- "see coffeemaker parts being made" -- to Lender's Bagel Bakery in West Haven -- "See bagels made, step by step." Several newspaper offices are listed, the U.S. Coast Guard Academy in New London, and the University of Connecticut Health Center in Farmington, as well as Southern New England Telephone Company in New Haven.

While most of the tours are free, some charge a modest fee. The listing gives a brief description of the tour, days and times available, age restrictions if any, and tells how to make reservations for groups.

The list is available at no charge on request. Write to Vacations, Department of Economic Development, 210 Washington Street, Hartford 06106 or telephone, toll-free in Connecticut, 1-800-842-7492. ■

Events

Nov. 13 & 14, 1982; Cornhusk Basketry Workshop at American Indian Archaeological Institute This Saturday and Sunday, 10 a.m. to 4 p.m., workshop for adults will be taught by noted basketmaker and author, Carol Grant Hart. Tuition is \$35 for members, \$45 for non-members. Call AIAI at 868-0518 to register. Enrollment is limited. AIAI is off Rt. 199 in Washington, CT.

Nov. 19; Dec. 3 & 10, 1982; The White Memorial Conservation Center (Box 368, Litchfield, CT 06759; 567-0015) is offering a series of lectures on "Down to Earth Astronomy." They'll be held at the center (Entrance is off Rt. 202, approximately 2½ miles west of Litchfield) on Friday evenings -- Nov. 19, Dec. 3 & 10 -- at 7:30 p.m. An evening field trip for outdoor observing is also planned, weather permitting, date to be arranged. Series is \$10 for members, \$12 for non-members. Family and student rates and single session rates available.

Nov. 20, 1982; Woodland Survival Walk at American Indian Archaeological Institute. Join Edmund K. Swigart, AIAI president, at 1 p.m. on Saturday for a walk along AIAI's Habitats Trail. Admission by membership or \$2 for adults, \$1 for children. AIAI is off Rt. 199 in Washington, CT.

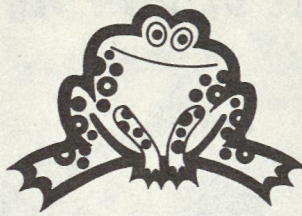
Nov. 25, 1982; THANKSGIVING DAY HIKE at the James L. Goodwin State Forest. Interested persons are invited to join this Sierra Club walk of 3 to 5 miles. Call Lois Kelley (455-9534) and let her know you'll be coming. Meet at 1 p.m. at Goodwin Conservation Center, just off Rt. 6 in Hampton.

Nov. 26, 1982; Bead Stringing Workshop at the American Indian Archaeological Institute, Rt. 199, Washington, CT. For nine-year olds to adults, this workshop runs from 1 to 3 p.m. Register by calling 868-0518. Fee is \$3.50 per person.

Permits

6/22/82: Revere Corporation of America, Wallingford To discharge pretreated metal finishing wastewaters, boiler blowdown and cooling tower blowdown to the Town of Wallingford Sewerage System. Conditions. ■

6/22/82: Automatic Plating Company, Inc., Bridgeport To discharge wastewaters from metal finishing operations to the City of Bridgeport Sewerage System in an average daily flow of 288,000 gallons per day. Conditions.



Hop to it!

Time to order Christmas gift subscriptions to DEP's Citizens' Bulletin! Just \$5 per year (two years, \$9). Send form below, with check or money order, to Ed., DEP Citizens' Bulletin, Rm. 112, State Office Bldg., Hartford, CT 06106.

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7/1/82: Connecticut Resources Recovery Authority, Hartford
 To operate and maintain a sanitary landfill with the resultant leachate discharge to the groundwaters of the state. The sanitary landfill site consists of approximately 80 acres located between the North Meadows flood dike and Route I-91 in Hartford. Conditions.

7/13/82: Glass Containers Corporation, Indianapolis
 To discharge non-contact cooling water, roof drainage, parking lot run-off and furnace cooling water to Five Mile River via a swamp. Conditions.

7/13/82: North American Printed Circuits, Division of Tyco Laboratories, Stafford
 To discharge wastewaters associated with printed circuit board manufacturing operations to the Town of Stafford Sewerage System. Conditions.

7/13/82: Bedoukian Research Inc., Danbury

To discharge washwaters from chemical synthesis and aspirator water to the City of Danbury Sewerage System. Conditions.

7/13/82: Federal Express Corporation, East Granby
 To discharge vehicle wash water to the Town of East Granby Sewerage System in an average daily flow of 400 gallons per day. Conditions.

7/13/82: Connecticut Redemption Center, Wolcott
 To discharge 50 gallons per day of wash water to the Town of Wolcott Sewerage System. Conditions.

7/13/82: C.H. Dexter Division The Dexter Corporation, Windsor Locks
 To discharge to the Connecticut River an average daily flow of 9,624,400 gallons per day of wastewaters. Conditions.

7/13/82: Bruce Manufacturing & Molding Co., Inc., Plantsville
 To discharge non-contact cooling water to the Quinnipiac River in

an average daily flow of 202,500 gallons per day. Conditions.

7/22/82: F.D. Rich Company, Inc., Stamford
 To discharge 21,510 gallons per day of domestic sewage to the City of Stamford Sewerage System. Conditions.

8/4/82: 30 Batterson Park Associates, L.P., Hartford
 To discharge 5,600 gallons per day of domestic sewage from 30 Batterson Park Road, Farmington to the Town of Farmington Sewerage System. Conditions.

8/4/82: A-Z Stripping and Refinishing, Inc., Norwalk
 To discharge 150 gallons per day of furniture stripping wastewater to the City of Norwalk Sewerage System. Conditions.

8/9/82: McClatchie Photo Service, Ltd., Shelton
 To discharge 3,200 gallons per day of photographic wastewater to the City of Shelton Sewerage System. Conditions.

8/9/82: Inter-State Ford Truck Sales Inc., Hartford
 To discharge 100 gallons per day of floor drainage to the City of Hartford, Metropolitan District Sewage System. Conditions.

8/9/82: Town of Kent
 To discharge 6,000 gallons per week of filtrate from a septage disposal system to the groundwaters of the Housatonic River Watershed. Conditions.

8/9/82: General Electric Company, Major Appliance Business Group, Louisville, Kentucky
 To discharge pretreated floor washdown wastewaters to the Town of Manchester Sewerage System. Conditions.

8/9/82: Blue Colony Diner, Newtown
 To discharge 2,000 gallons per day of domestic sewage and restaurant wastewaters to the groundwaters in the watershed of the Housatonic River. Conditions.

8/9/82: The Superior Steel Ball Company, Hartford
 To discharge 15,000 gallons per day of wastewaters from metal finishing operations to the City of Hartford Sewerage System. Conditions.

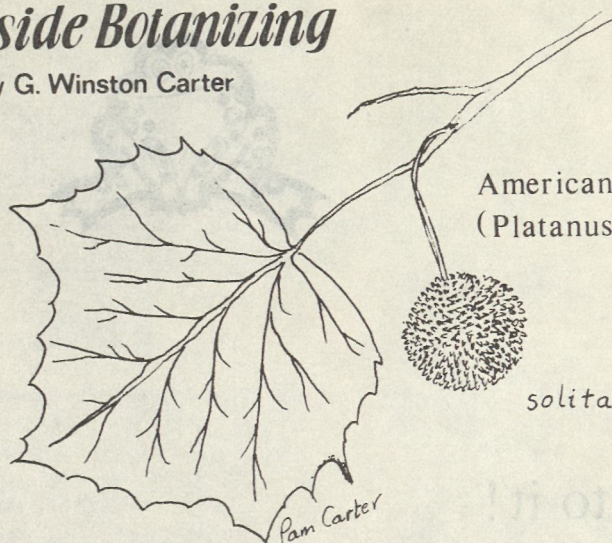
The first thing about the American sycamore that catches the eye is probably its beautiful mottled bark. This pattern to the bark develops when the tree is about eight to 10 inches in diameter at the base. The rather rigid brown outer bark begins to rip off in patches, revealing the smooth white bark beneath. The different colors in the bark are due to the varying lengths of time the chemicals in the bark have been exposed to sunlight.

The massive size of some sycamores is also very impressive. It is the largest broad-leaf tree east of the Rockies. The tulip tree (*Liriodendron tulipifera*) is taller, but the volume of its wood is less. The sycamore's zigzag branching, dangling ball-like fruit, maple-like leaves, and cone-shaped winter buds are also very distinctive features.

The closely related London plane tree (*Platanus acerifolia*), which is a hybrid, is similar in appearance but has green and yellowish inner bark compared with the white color of the American sycamore. The ball-like fruit usually occurs

Trailside Botanizing

by G. Winston Carter



American sycamore
(*Platanus occidentalis*)

solitary fruit

in twos instead of the single fruits of American sycamore. There are also some small differences in the appearance of the leaves.

American sycamore grows naturally along river and stream banks. However, it is sometimes planted, along with the hardier London plane tree, in cities because of its ability to withstand air pollution. It can breathe through its bark more efficiently than many trees can

because the old bark is constantly being shed, with its pollutants.

The American sycamore's wood is tough, which makes it useful for such items as butcher blocks. In some cases, if the wood is cut properly, it can be used for veneer and furniture. It has little value as food for wildlife; however, the tendency of the wood to rot quickly in nature makes the sycamore an ideal den tree for animals. ■

DEP Citizens' Bulletin

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